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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/974,898

Applicant(s)

MIICHI ET AL.

Examiner

Kevin Siangchin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 17-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 17-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Detailed Action

Preliminary Amendments

1. The preliminary amendment filed 2002 February, 01 has been made of record. Claim 2 has been amended accordingly. Claims 17-28 have been added. Claims 5-16 have been canceled. The new drawings and the amendments to the Specification have been acknowledged.

Drawings

Replacement Drawings

2. The drawings were received on February 01, 2001. These drawings are not acceptable, as they do not comply with C.F.R. § 1.121(d), which requires that:

All changes to the drawing(s) shall be explained, in detail, in either the drawing amendment or remarks section of the amendment paper.

(1) A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be included. The marked-up copy must be clearly labeled as "Annotated Marked-up Drawings" and must be presented in the amendment or remarks section that explains the change to the drawings..

(2) A marked-up copy of any amended drawing figure, including annotations indicating the changes made, must be provided when required by the examiner.

Objections

3. The drawings are objected to because of the following informalities:

- a. The lines and text in all of the drawings are "fuzzy" and, as a result, difficult to read. This may also prevent a proper reproduction of the submitted drawings. Examples of "fuzziness" include the text inside block 48 of Fig. 4 and the text inside block n16 of Fig. 6.
- b. An edge is missing from the continuation symbol (☐) 1 in Fig. 5.
- c. The word "LIGHTING" is misspelled in block n14 of Fig. 5.

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- d. The word "LIGHT" is misspelled in block n19 of Fig. 6.
- e. Figures 7-8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (as discussed in the Applicant's *Background of the Invention*).
See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

Objections: Title of the Invention

- 4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Objections: Abstract

- 5. The abstract of the disclosure is objected to. Applicant is reminded of the proper content of an abstract of the disclosure. A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for

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making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

6. The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

7. Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

8. Finally, in accordance with C.F.R. § 1.72(b), the Abstract must not exceed 150 words in length (the current Abstract has 205 words). Correction is required. See MPEP § 608.01(b).

Objections

9. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are:

- a. The term "check object person", found throughout the specification (e.g. paragraph¹ 2, line 2 on page 1 of the Applicant's disclosure), is not adequately defined.
- b. The Applicant's usage of the word "timing" in the specification (e.g. paragraph 1, line 2 on page 2 of the Applicant's disclosure) is incorrect.
- c. The term "check poor image", found throughout the specification (e.g. last line on page 2

¹ When referring to paragraphs in the cited references or the Applicant's disclosure, the convention followed here is that the paragraph number is assigned to paragraphs of a given column (if applicable) or section, sequentially, beginning with the first full paragraph. Paragraphs that carry over to other columns or page will be referred to as the last paragraph of the column or page in which they began.

- of the Applicant's disclosure), is not adequately defined.
- d. The term "high check function", found throughout the specification (e.g. line 4 of paragraph 3 on page 3 of the Applicant's disclosure), is not adequately defined.
 - e. The third paragraph on page 10 of the Applicant's disclosure does not make sense. This is exacerbated by the Applicant's incorrect usage of the word "complement" and "complementary".
 - f. The Applicant fails to define "normal time" (e.g. line 3 of paragraph 1 on page 13 of the Applicant's disclosure).
 - g. On page 13, last paragraph, lines 1-4, the Applicant refers to image 23 presumably of Fig. 2. However, according other parts of the specification (and Fig. 2 itself), reference number 23 corresponds to a time or duration of time. Indeed, referring to 23 as an image contradicts the sentence in which that reference appears (see page 13, last paragraph, lines 1-4 of the Applicant's disclosure).
 - h. The second paragraph on page 17 of the Applicant's disclosure does not make sense. Poor grammar, sentence structure, and word selection are at fault.
 - i. Lines 4-7 of page 18 and the paragraph that follows do not make sense. Poor grammar, sentence structure, and word selection are at fault.

This list is by no means exhaustive. The Applicant is advised to thoroughly revise the specification. The revision, however, must not introduce any *new matter* (i.e. subject matter not supported in the originally filed disclosure).

Appropriate correction is required.

Claims

Objections

10. Claim 22 and 26 is objected to because of the following informalities. The word "key" in these claims should be changed to "keypad", "keyboard", or the like, in order to better reflect the operation of the claimed feature

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(i.e. the receipt of a personal identification code). A key, in the usual sense of the word, is typically are not capable of receiving a personal identification code. Appropriate correction is required.

Rejections Under 35 U.S.C. § 112(2)

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 24-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. *The following is in regard to Claim 24.* Claim 24 recites the limitation "said camera". There is insufficient antecedent basis for this limitation in the claim.

14. *The following is in regard to Claims 24-27.* In these claims, the terms "suitable for comparison" are vague and even inconsistent with the Applicant's disclosure. Specifically, it is not clear what can be considered "suitable for comparison". For example, is a noisy image suitable for comparison. The Applicant fails to resolve this terminology in the specification.

15. The ambiguity arises from a very poor selection of words. Claims 24-27 appear to be directed toward the successive comparison of images or, in the case of Claims 26-27, of personal identification codes, as disclosed in the Applicant's specification. See, for example, Figs. 5-6. There, the Applicant does not determine the suitability of an image for comparison (*it has already been compared*), but rather whether the image matches any of the registered images, to within a specified degree of similarity (steps n6-n11 of Fig. 5 and steps n16-n22 of Fig. 6). If this was indeed the Applicant's intention, then the Applicant would be better served by replacing the faulty terminology with terminology that indicates matching – e.g. replace "not suitable for comparison" with "does not match any of the registration images".

16. *The following is in regard to Claim 24-25.* Claim 24 recites: "selecting a second photographic image for comparison, said second photographic image having been created by said camera prior to said check start button being pressed". Similarly, Claim 25 recites: "selecting a third photographic image for comparison, said third

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photographic image having been created by said camera prior to said second photographic image". In the case of Claim 24, it is not clear from the current language of the claim whether the second photographic image is one of the plurality of images of the object, captured when the object is detected, or one of the previously memorized registration images. It should be clear that both classes of images could be regarded as being images created by the camera prior to pressing the check start button. The current language of Claim 25 results in a similar ambiguity because both the registration images and certain images among the plurality of images, captured upon object detection, represent images created by the camera prior to the second photographic image. In both Claims 24 and 25, it is clear from the Applicant's specification that the second and third images are among the plurality of images of the object, captured when the object is detected. The Applicant must indicate this somehow. For example, instead of simply claiming that the second and third image were created prior to the respective events (i.e. the button press and second image capture, respectively), the Applicant may define a more specific interval of time (e.g. "prior to said check start button being pressed and after the photographic object was detected" and "prior to said second photographic image, yet prior to said check start button being pressed and after the photographic object was detected"). This interval impliedly relates the second and third image to the aforementioned plurality of object images. Alternatively, the applicant may remove the "prior to" language altogether and replace it with language indicating directly the relation of the second and third images with the aforementioned plurality of images. For instance, rephrasing the faulty language of Claims 24 and 25, respectively, as:

...selecting a second photographic image for comparison, said second photographic image being one of the said plurality of images of the photograph object captured in the case where the photograph object was detected...

...selecting a third photographic image for comparison, said third photographic image being one of the said plurality of images of the photograph object captured in the case where the photograph object was detected and created by said camera prior to said second photographic image...

This language not only resolves the ambiguities discussed above, but is also consistent with specification and more adequately defines the Applicant's claimed invention. Claims 24-25 will be interpreted as though this language appeared as shown above.

Rejections Under 35 U.S.C. § 112(1)

17. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

18. Claims 24-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

19. *The following is in regard to Claims 24-25.* Claim 24 recites: "selecting a second photographic image for comparison, said second photographic image having been created by said camera prior to said check start button being pressed". Similarly, Claim 25 recites: "selecting a third photographic image for comparison, said third photographic image having been created by said camera prior to said second photographic image". The capture of the second photographic image does occur in a time frame extending indefinitely prior to the press of the check start button, as the current language of Claim 24 implies. Instead, the Applicant's specification only supports a capture of the second photographic image at a time prior to the button press and after the detection of the object. Similarly, the Applicant's specification only supports the capture of the third photographic image at a time prior to the second photographic capture and prior to the button press, but after the detection of the object. In other words, by merely claiming that the second and third images were captured prior to the button press and second image capture, respectively, the Applicant extends the scope of Claims 24 and 25 beyond the bounds of his/her/their disclosure. The Applicant may resolve these issues by rectifying the language of Claims 24-25 in line with the suggestions provided above.

Rejections Under 35 U.S.C. § 102(b)

20. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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21. Claims 3-4 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Burt (U.S. Patent 5,063,603).

22. *The following is in regard to Claim 3.* Burt discloses an image comparison apparatus (Burt, Fig. 1) that includes:

- (3.a.) A captured image is compared (see, for example, Burt column 14, lines 51-59) with information concerning registration images previously memorized in a memory means (e.g. templates - Burt Fig. 4, reference number 118a).
- (3.b.) A comparison result is outputted. Notice the output of *object recognition means 114* in Burt Fig. 1.
- (3.c.) A plurality of captured images of a same object is successively² compared with the information concerning the registration images memorized in the memory means (e.g. Burt column 14, lines 51-59).
- (3.d.) A proper judgment result is outputted in a case where there is a similar image satisfying a "check judgment threshold" (e.g. the predefined threshold(s) discussed in Burt column 9, lines 61-67 to column 10, lines 1-5 and column 12, lines 18-37).
- (3.e.) An improper judgment result is outputted in a case where there is no similar image satisfying the check judgment threshold in the plurality of images (e.g. Burt, column 15, lines 53-56).

It has thus been shown that the image comparison apparatus of Burt adequately satisfies the limitations of Claim 3.

23. *The following is in regard to Claim 4.* Burt discloses an image comparison system (Burt, Fig. 1) that includes:

- (4.a.) Photographing means for capturing an image of a photograph object (e.g. imager means

² See Burt column 16, lines 56-59.

100 – Burt, Fig. 1).

- (4.b.) The captured image is compared (see, for example, Burt column 14, lines 51-59) with information concerning registration images previously memorized in a memory means (e.g. templates - Burt Fig. 4, reference number 118a).
- (4.c.) A comparison result is outputted. Notice the output of *object recognition means* 114 in Burt Fig. 1.
- (4.d.) A plurality of captured images of a same object is successively² compared with the information concerning the registration images memorized in the memory means (e.g. Burt column 14, lines 51-59).
- (4.e.) A proper judgment result is outputted in a case where there is a similar image satisfying a “check judgment threshold” (e.g. the predefined threshold(s) discussed in Burt column 9, lines 61-67 to column 10, lines 1-5 and column 12, lines 18-37).
- (4.f.) An improper judgment result is outputted in a case where there is no similar image satisfying the check judgment threshold in the plurality of images (e.g. Burt, column 15, lines 53-56).

It has thus been shown that the image comparison apparatus of Burt adequately satisfies the limitations of Claim 4.

24. *The following is in regard to Claim 28.* Burt discloses an image comparison system (Burt, Fig. 1) that includes the following:

- (28.a.) An image capture portion for capturing a plurality of photographic images (e.g. Burt *Summary of Invention*, paragraph 2, sentence 1) of a person received from a camera (e.g. *imager means* 100 shown in Burt Fig. 1). Although the apparatus and methodology of Burt is applicable to a variety of objects, Burt focuses his disclosure on recognizing people (Burt Abstract, sentence 1 and column 5, lines 38-45).
- (28.b.) A memory (e.g. *frame memory* 300 of Burt Fig. 3) coupled (see Burt Fig. 3 in conjunction with Fig. 1) to the image capture portion for storing the plurality of captured

photographic images (Burt column 6, lines 20-35).

- (28.c.) A *stored-data* (i.e. stored-data 118 of Burt Fig. 1) section (i.e. a “registration file” – see Burt Fig. 1 and Fig. 4) for storing image data of registered persons (i.e. *templates* – Burt column 5, lines 64-68).
- (28.d.) A processing unit (e.g. *object recognition means* 114 of Burt Fig. 1 and Fig. 4) for successively² comparing the plurality of photographic images with the image data stored by the registration file in order to determine whether a match exists (e.g. Burt column 14, lines 51-59 and column 16, lines 15-22).

The image comparison apparatus of Burt, therefore, conforms sufficiently to the image comparison center apparatus of Claim 28.

25. Claims 2, 24, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Seeley et al. (U.S. Patent 6,069,655)³.

26. *The following is in regard to Claim 24.* Seeley et al.⁴ disclose a video security system, whose operation includes the following:

- (2.a.) Detecting the existence of the photograph object (e.g. Seeley et al. column 3, lines 63-64 and column 11, lines 55-56).
- (2.b.) Capturing a plurality of images of a photograph object when the object has been detected (e.g. Seeley et al. column 12, last paragraph and Figs. 9-10).
- (2.d₁.) Comparing at least one of the plurality of acquired images with the information concerning the previously memorized registration image (e.g. “prior stored images from

³ Notice below that the subject matter of Claim 2 is not treated separately. Instead, this subject matter is treated simultaneously with the subject matter of Claims 24-27, as evident in the rejection of Claim 24 below. Since Claim 24 inherits all limitations of Claim 2, a rejection of Claim 24 effectively results in the rejection of the subject matter put forth in Claim 2. Claim 2 limitations are denoted as (2...).

⁴ Note that Seeley et al. incorporate the teaching of U.S. Patent Application Serial Nos. 08/772731, 08/771991, and 08/772595 into their disclosure (e.g. Seeley et al. column 11, lines 42-45). Reference will be made in this document to these applications and any discussion in the Background of Seeley et al. related to these documents.

the same camera” – Seeley et al. column 11, lines 39-42; or, reference images – Seeley et al. column 4, lines 3-6).

- (2.e.) Outputting a comparison result. Notice from Seeley et al. Fig. 7 that the result of the image authentication **42** (i.e. the result of the aforementioned comparison) is passed to the central station (CS), where it may be displayed on a workstation (e.g. Seeley et al. Fig. 15, workstation **106**; see also Seeley et al. column 16, lines 13-32 and Fig. 14) monitor (e.g. monitor **602** of Seeley et al. Fig. 15).

After an intrusion has been detected and the image capture has completed (Seeley et al. column 15, lines 13-17), the operator is presented with a the plurality of acquired images (i.e. *snapshots* – Seeley et al. column 12, last paragraph). See Seeley et al. column 15, lines 10-17. These are presented to the operator as thumbnails (Seeley et al. column 15, lines 25-28 and Fig. 8B) and the operator can highlight a thumbnail of interest (Seeley et al. column 16, line 67 to column 17, line 1), with the intent of “blowing it up” to its full size (Seeley et al. column 15, lines 31-33 and Fig. 8A). Given the interface available to the user (i.e. workstation **106**), it should be clear that this action is accomplished either via a mouse-click or by using the keyboard. In either case, such actions are analogous to a “button press”. Thus, Seeley et al.’s system:

- (2.c₂.) “Detects” the press of a button.

The user performs this action if he/she wishes to see a full-frame video (Seeley et al. column 16, line 67 to column 17, lines 1-3), presumably because the full-sized image was not adequate (i.e. not “suitable for comparison”) for determining if an intruder has been previously detected (Seeley et al. column 16, lines 64-67). In other words, a

- (24.a.) Determination is made that an image acquired immediately after the button was pressed is not suitable for comparison.

27. The images of the requested video are then authenticated according to the comparison process discussed above in item (2.d₁). See Seeley et al. column 15, lines 44-50. This implies a secondary purpose for the “button press”. The operator uses the button press to initiate the authentication of the requested video sequence. That is, the button is pressed for “check confirmation”. Taking this into account, the system of Seeley et al.:

- (2.c.) “Detects” the press of a button for check confirmation.

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Also notice that the comparison ensues after the user presses the button. Therefore, the aforementioned comparison more precisely involves:

- (2.d.) Comparing at least one of the plurality of acquired images with the information concerning the previously memorized registration image (e.g. "prior stored images from the same camera" – Seeley et al. column 11, lines 39-42; or, reference images – Seeley et al. column 4, lines 3-6), when the press of the button is detected.

Lastly, by way of the Seeley et al.'s authentication process (Seeley et al. column 3, lines 60-67 to column 4, lines 1-19):

- (24.b.) A set of frames (i.e. the video sequence of snapshots), including a "second" photographic image (or snapshot) are selected for comparison. This set of frames was captured after the initial intrusion detection (see item (2.b.) above and, therefore, prior to the press of the aforementioned button. As a result, the second photographic image would also have been created by the camera prior to the said button press.

In this manner, the methodology employed in Seeley et al.'s system sufficiently conforms to the image comparison method of Claim 24.

28. *The following is in regard to Claim 26.* As shown above, authentication is carried out on a set of snapshots (see items (2.d.) and (24.b.) above, as well as Seeley et al. column 15, lines 44-50). This authentication involves determining whether the photographed objects fall within a designated class of objects (i.e. objects depicted in the set of reference images - Seeley et al. column 3, lines 60-67 to column 4, lines 1-6), such as humans (e.g. those that have been previously detected – Seeley et al. column 16, lines 65-67). In other words, the authentication involves determining whether the set of snapshots are "suitable for comparison". As stated above, this set of snapshots includes a "second" photographic image. Therefore, according to Seeley et al.:

- (26.a.) A determination is made whether the set of snapshots, which includes a second photographic image, are not suitable for comparison.

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29. The system of Seeley et al. also includes a keypad (e.g. keypad K of Seeley et al. Fig. 11). Using this keypad, the entrant must provide an acceptable password (e.g. Seeley et al. column 19, lines 21-23 and 45-46).

Clearly, this entails:

- (26.b.) Comparing the password (i.e. "a personal identification code") received at the keypad
(i.e. "a personal identification keypad") with a previously stored password to determine
whether they match.

In this manner, the methodology employed in Seeley et al.'s system sufficiently conforms to the image comparison method of Claim 26.

Rejections Under 35 U.S.C. § 103(a)

30. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

31. Claims 1-2, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burt, in view of Kawano et al. (U.S. Patent Application Publication 2002/0015094).

32. *The following is in regard to Claim 1.* Burt discloses an image comparison apparatus (Burt, Fig. 1) in which:

- (1.a.) An image of a "photograph object" is acquired by using photograph means (e.g. imager means 100 – Burt, Fig. 1)
- (1.b.) The acquired image is compared (see, for example, Burt column 14, lines 51-59) with information concerning previously memorized registration images (e.g. templates - Burt Fig. 4, reference number 118a).
- (1.c.) A comparison result is outputted. Notice the output of *object recognition means 114* in Burt Fig. 1.

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The apparatus includes:

- (1.d₁.) The photograph means acquires a plurality of images of the photograph object during a predefined period of time. See, for example, Burt *Summary of Invention*, paragraph 1 and column 16, lines 56-59.
- (1.e₁.) At least one of the plurality of acquired images is compared with the information concerning the previously memorized registration image (e.g. Burt column 14, lines 51-59)

Burt, however, does not expressly show or suggest:

- (1.f.) Providing an object detection sensor for detecting existence of the photograph object.

Nor does Burt show or suggest: performing the comparison of (1.b₁.) and (1.e₁.) “in a case where a button for check confirmation is pressed down”; and that the period of time of (1.d₁.) correspond to a “period from detection of the photograph object by the object detection sensor to a press of the button”.

33. Kawano et al. disclose a system for monitoring and recording the movement of a subject entering a designated area (Kawano et al. Abstract). The system includes:

- (1.f.) An object detection sensor for detecting existence of the photograph object (e.g. *motion vector detecting circuit 42* shown in Kawano et al. Fig. 1).

Furthermore, in the system of Kawano et al.:

- (1.d₂.) A photograph means (e.g. video camera 1 shown in Kawano et al. Fig. 1) acquires a plurality of images of a subject (i.e. the photograph object) from the time the subject has been detected by the detecting sensor (e.g. step 52 of Kawano et al. Fig. 11) to the time a *recording stop command* is issued (e.g. steps 59-61 of Kawano et al. Fig. 11). See, for example, Kawano et al. Figs. 8 and 11-12. This command is entered from an *operating unit* (e.g. operating unit 225 of Kawano et al. Fig. 10). Though not explicitly mentioned by Kawano et al., it should be understood that such a command could be implemented on an operating unit as a button (e.g. a “check confirmation button”).

Notice that, when the recording ceases after the issuance of the recording stop command, a collection of recorded images (see Kawano et al., column 3, paragraph [0068]) is available to the operator (e.g. a supervisor) so that he/she

may “check the customer” (e.g. Kawano et al. column 4, paragraph [0085], last sentence) or, in other words, authenticate the customer’s identity. In this manner, the system of Kawano et al. implicitly involves:

- (1.e₂.) An operator, such as a supervisor, *manually* comparing at least one of the plurality of acquired images (i.e. those obtained according to (1.d₂.) and recorded in a recording device – e.g. *digital recording device 204* of Kawano et al. Fig. 10), when the recording stop command is issued or a corresponding button (see above) is pressed.

34. Burt suggests that his image comparison apparatus is applicable to systems such as that of Kawano et al. (Burt column 16, lines 15-30). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention to incorporate the image comparison apparatus of Burt into the monitoring system of Kawano et al. (or vice versa). Such an incorporation would advantageously provide an *automatic* means for authenticating a detected subject’s identity by automatically comparing the acquired series of images of a detected subject to registered images.

35. *The following is in regard to Claim 2.* As shown above with regard to Claim 1, Burt discloses:

- (2.b₁.) Capturing a plurality of images of a photograph object. See, for example, Burt *Summary of Invention*, paragraph 1 and column 16, lines 56-59.
- (2.d₁.) Comparing at least one of the plurality of acquired images with the information concerning the previously memorized registration image (e.g. Burt column 14, lines 51-59).
- (2.e.) Outputting a comparison result. Notice the output of *object recognition means 114* in Burt Fig. 1.

Furthermore, it was shown that Kawano et al. disclose:

- (2.a.) Detecting the existence of the photograph object (e.g. via the *motion vector detecting circuit 42* shown in Kawano et al. Fig. 1).
- (2.b₂.) Capturing a plurality of images of a photograph object when the object has been detected. See, for example, Kawano et al. Fig. 11 (e.g. steps 52-53).

- (2.c₂) “Detecting” a *recording stop command* (e.g. step 59 of Kawano et al. Fig. 11).
- (2.d₂) An operator, such as a supervisor, *manually* comparing (e.g. Kawano et al. column 4, paragraph [0085], last sentence) at least one of the plurality of acquired images (i.e. those obtained according to (1.d₂) and recorded in a recording device – e.g. *digital recording device 204* of Kawano et al. Fig. 10), when the recording stop command is issued (e.g. steps 59-61 of Kawano et al. Fig. 11).

As discussed above, the recording stop command could be implemented as a button. Finally, it was shown above that, given the teachings of Burt and Kawano et al., it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention, to incorporate the image comparison and object recognition methodology of Burt into a method, such as that of Kawano et al. (e.g. items (2.a.) and (2.b₂)-(2.d₂)), for detecting and monitoring a subject. One would have been motivated to do so in order to provide the operator with an automatic means for “checking the customer” (i.e. recognizing the detected subject).

36. *The following is in regard to Claim 17.* Following from the previous discussion relating to Claim 1, the teachings of Burt and Kawano et al. can be combined to yield an image comparison apparatus comprising:

- (17.a.) An object detection sensor for detecting a person to be photographed (e.g. *motion vector detecting circuit 42* shown in Kawano et al. Fig. 1).
- (17.b.) A camera (e.g. imager means **100** shown in Burt Fig. 1 or video camera **1** shown in Kawano et al. Fig.1) for creating at least one photographic image of the person upon detection by the object detection sensor. See, for example, Kawano et al. Fig. 11 (e.g. steps 52-53).
- (17.c.) A “check start” button (e.g. the aforementioned *recording stop command* implemented as a button). As discussed above, given that Kawano et al. allow manual comparison of the photographic images subsequent to the issuance of the recording stop command, it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention, to instead automate this comparison by using the recognition

methodology of Burt. If such an automation were provided, then after the issuance of the recording stop command, a comparison would ensue between the said at least one photographic image and photographic images previously stored by said image comparison apparatus (e.g. templates - Burt Fig. 4, reference number **118a**) in order to determine whether a match exists (e.g. Burt column 10, lines 25-36 and column 12, lines 18-37).

Arguments provided above, with respect to claim 1, are thus applicable.

37. *The following is in regard to Claim 18.* As discussed previously, with regard to item (17.c.) and Claim 1, the image comparison apparatus of Burt can be integrated into the monitoring system of Kawano et al., or vice versa. The result is an image comparison apparatus that conforms to that of Claim 17. Furthermore, as the image comparison apparatus of Burt provides a means for capturing at least one photographic image created by a camera (e.g. imager means **100** shown in Burt Fig. 1) and a means (e.g. *object recognition means 114* of Burt Fig. 1 or *correlation means 402* of Fig. 4) for comparing the at least one photographic image with photographic images previously stored (i.e. templates – Burt column 6, lines 1-19). See, for example, Burt column 9, lines 23-27.

38. *The following is in regard to Claim 19.* As shown above the teachings of Burt and Kawano et al. can be combined so as to yield an image comparison apparatus that satisfies the limitations of Claim 17. It is well known to illuminate a subject (e.g. with a flash) while it is being photographed. Burt, for example, includes a means for illuminating objects within the imager's field-of-view with radiation (Burt column 3, lines 64-65). Clearly, the advantage of providing such an illumination device is that it would illuminate the subject with an amount of light sufficient to ensure a proper image is captured.

39. *The following is in regard to Claim 20-21.* As shown above the teachings of Burt and Kawano et al. can be combined so as to yield an image comparison apparatus that satisfies the limitations of Claim 17. The image comparison apparatus of Burt (e.g. Burt Fig. 1) additionally includes a display monitor (i.e. *display monitor 122* of Burt Fig. 1). As indicated by Burt (Burt column 5, lines 14-18), the display monitor may be used for displaying results of whether a match exists (i.e. a "check result display"). Clearly, the display monitor would also be capable of displaying a number of times a check operation has been conducted (i.e. acting as a "check count display").

Therefore, the display monitor of Burt satisfies the substantive limitations of Claims 20-21.

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40. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burt and Kawano et al., in further view of Coffin et al. (U.S. Patent 5,991,429).

41. *The following is in regard to Claim 22.* As shown above the teachings of Burt and Kawano et al. can be combined so as to yield an image comparison apparatus that satisfies the limitations of Claim 17. However, neither Burt nor Kawano et al. expressly show or suggest that such an apparatus should include a personal identification keypad for receiving a personal identification code input to be compared with a previously stored personal identification code.

42. Coffin et al. disclose a security access and identification system that employs facial recognition. In the system of Coffin et al. each *enrolled* individual (i.e. an individual having personal information and facial images attributed to them and stored in a database – see, for example, paragraph 1 of Coffin et al.'s *Summary of Invention*) has a personal identification number (PIN) assigned to them (Coffin et al. column 1, lines 40-41). Accordingly, a person who desires clearance is prompted to enter their assigned PIN (Coffin et al. column 7, lines 50-51). The PIN is subsequently compared with stored PINs (Coffin et al. column 7, lines 40-44). Clearly, this necessitates some means (e.g. a keypad or keyboard) for entering that assigned PIN. Therefore, a “personal identification keypad” is an inherent feature of the system of Coffin et al.

43. The systems and apparatus of Coffin et al., Burt and Kawano et al. are clearly functionally and structurally similar. Therefore, given the teachings of Coffin et al., it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention, to augment an image comparison apparatus (e.g. the image comparison apparatus obtained by combining the teachings of Burt and Kawano et al. as discussed above) with a personal identification keypad for receiving a personal identification code input to be compared with a previously stored personal identification code. Besides providing an additional layer of security, such a modification would facilitate an efficient search of the stored user/subject information. The latter is a result of searching the database initially by PIN, as opposed to a more computationally burdensome search by image.

44. *The following is in regard to Claim 23.* As shown above the teachings of Burt and Kawano et al. can be combined so as to yield an image comparison apparatus that satisfies the limitations of Claim 17. However, neither

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Burt nor Kawano et al. expressly show or suggest that such an apparatus should include a card-reader for reading a personal code stored on a card and comparing that code with previously stored personal codes.

45. As discussed previously with respect to Claim 22, Coffin et al. demonstrate the application of PIN-authentication, in conjunction with facial image recognition, within the context of a security access and identification system. It was well known, at the time of the Applicant's claimed invention, that such PINs could be stored on cards such as so-called "swipe-cards", credit cards, or ATM cards. These devices generally require a card-reader for accessing the codes stored thereon. Official Notice is taken. With regard to Coffin et al.'s teachings, such card/card-reader configurations merely provide another means for the user to enter a PIN. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention, to configure the aforementioned image comparison apparatus to allow or require a user to enter an assigned PIN, via a card containing the PIN, in addition to authenticating his/her facial image. The motivations for using PINs, in accordance with the teachings of Coffin et al., were discussed above. The motivation to use a card/card-reader configuration, as opposed to other means for accepting PINs, would have been to obviate the need for a user to remember his/her PIN or to manually enter it.

46. Claims 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seeley et al.

47. *The following is in regard to Claim 25.* As shown above, the methodology employed in Seeley et al.'s system sufficiently conforms to the image comparison method of Claim 24. As mentioned above, Seeley et al. store a video (i.e. snapshot of the event – Seeley column 12, last paragraph) after an intrusion has been detected. These video sequences are then authenticated. See, for example, Seeley et al. column 13, lines 22-30, column 15, lines 43-50 and Fig. 7. Seeley et al., however, do not explicitly mention any particular order in which the set of captured images (stored video) are processed. There is no mention of, say, processing a second image, then a third image, preceding the second temporally, should the second image be deemed "unsuitable", and so on.

48. As just stated, authentication is carried out on a sequence of images. It can be reasonably assumed that the order of comparison would proceed sequentially (e.g. beginning with the most recent frame and proceeding in a temporal sequence through the remaining frames), as opposed to some random, disorganized manner. This order is

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natural since it coincides with the manner in which video frames are typically stored, that is, in time sequence.

Inspecting the most recent frame first may be particularly advantageous if one assumes the intruder continues to approach the camera. This is a reasonable assumption, as the alarm unit (i.e. alarm unit 16 of Seeley et al. Fig. 7) is not activated until after the authentication (Seeley et al., Abstract, sentence 3). As the intruder approaches the camera, his/her/its visage would likely become better defined and, thus, the captured image more indicative of the intruder. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention, to ensure that the captured images of Seeley et al.'s system are processed sequentially in time, preferably beginning with the most recent image. This would result in the following:

- (25.a.) Determining whether the second image is "not suitable for comparison".
- (25.b.) Selecting a third photographic image for comparison, wherein the third photographic image was captured prior to the second photographic image, and so on, until the entire sequence has been examined.

49. *The following is in regard to Claim 27.* As discussed above, Seeley et al. demonstrate the usage of a password in conjunction with the image-based authentication. In the system of Seeley et al., the password is received via a keypad, not read from an identification card with a previously stored password (personal identification code).

50. It was well known, at the time of the Applicant's claimed invention, that data such as passwords could be stored on cards such as so-called "swipe-cards", credit cards, or ATM cards. These devices generally require a card-reader for accessing the codes stored thereon. Official Notice is taken. With respect to the system of Seeley et al., such card/card-reader configurations merely provide an alternative means to the keypad for password entry. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the Applicant's claimed invention, to configure the system of Seeley et al. to allow or require an entrant to enter an assigned password, via a card containing the password (and possibly additional information), as opposed to manual entry via the said keypad. The motivation to use a card/card-reader configuration, in this manner, as opposed to a keypad, would have been to eliminate any challenge the entrant may have in remembering his/her password or the strain of manually entering it.

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Following a similar line of reasoning as presented above with regard to Claim 26, it should be clear that such a configuration involves:

- (27.a.) A determination is made whether the set of snapshots, which includes a second photographic image, are not suitable for comparison.
- (27.b.) Comparing the password (i.e. "a personal identification code") received read from an identification card (e.g. "swipe-cards", credit cards, ATM cards. etc.) with a previously stored password to determine whether they match.

Citation of Relevant Prior Art

51. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

References [1]-[4] are related to systems or methods that employ a "template matching" scheme to identify subjects depicted in at least one captured image. [1]-[4] all include some means of motion detection whereby image capture is initiated. [1]-[4], however, generally lack the "confirmation start" button of the claims. Whereas Burt suggests examining an entire sequence of images or frames, [1]-[4] generally examine each of the frames as they are captured.

[1] *U.S. Patent 5,164,992*. Turk et al. Publication Date: November 1992.

[2] *U.S. Patent 3,564,132*. Baker et al. Publication Date: February 1971.

[3] *U.S. Patent 6,418,235*. Morimoto et al. Publication Date: July 2002.

[4] *U.S. Patent 6,687,386*. Ito et al. Publication Date: February 2004.

[5] *U.S. Patent 6,154,133*. Ross et al. Publication Date: November 2000.

[5] discloses another access control system wherein a video image of a subject is captured when a set of motion detectors indicates the subject's presence. [5] includes a *shunt/silence*

button, which, when pressed, commences the compilation of captured frames in a “video clip”. This “video clip” is then used by personnel to authenticate the observed subject. Therefore, A *manual* recognition by security personnel is initiated after pressing the shunt/silence button. In this manner, the shunt/silence button is analogous to the “confirmation start” button of the Claims. As argued above, such manual recognition can be replaced with an automatic recognition process such as that of Burt.

[6] *U.S. Patent 5,386,103*. DeBan et al. Publication Date: January 1995.

[6] discloses an identification and verification system that incorporates both PIN verification and facial recognition. The facial recognition is a variant of the *eigen-faces* approach and is, therefore, essentially the same as the image comparison methodology of the Applicant. The system shares many of the structural components of the Applicant’s image comparison apparatus (e.g. display means, keyboard/keypad, card-reader, database, camera, etc.). The system also resembles, at least extrinsically, the apparatus of the Applicant (perhaps more so than the security systems cited above).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Siangchin whose telephone number is (703)305-7569. The examiner can normally be reached on 9:00am - 5:30pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Kevin Siangchin



Examiner

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